CCIE Enterprise Infrastructure Overview

CCIE Enterprise Infrastructure is the highest level certificate in enterprise track. It is also an expert level certification. Qualifying this exam and achieving certificate acknowledge your skills and knowledge with CCIE enterprise infrastructure solution. It is one of the most upgraded and advanced certificate in Networking profession. This certification will replace recent CCIE routing and switching certification.

About the training

- **Study Material:-** Live Training Videos, Streaming Recorded Videos, Online Lab Workbook, and Remote Virtual Lab access.
- **Duration:- 4 Months**

Requirements

- CCIE aspirants are recommended to have 5+years of experience with designing, deploying, operating and optimizing enterprise networking technologies and solutions.
- Basic knowledge of course content of this course

What you will learn

- Deep information of course content of CCNP and CCNA Enterprise examination.
- Knowledge about switching topics such as spanning-tree, Ether channels.
- VLANs, and trunks
- Understanding about routing protocols like RIP, EIGRP, OSPF and BGP.
- Tunneling concepts like MPLS and DMVPN.
- Knowledge about Quality of Service (QoS).
- Network Automation

About Instructor

The trainer of this course is industrial expert with multi vendor knowledge and skills. The trainer is verified by UniNets itself and has made this training course with all his knowledge and skills. He has covered all course content to make to an expert of the course.

Course content

Practical Exam v1.0

Network Infrastructure

- Switched campus
  - Switch administration
  - Layer 2 protocols
  - VLAN technologies
  - EtherChannel
  - Spanning Tree Protocol
- Routing Concepts
  - Administrative distance
  - VRF-lite
  - Static routing
  - Policy Based Routing
  - VRF-aware routing with any routing protocol
  - Route filtering with any routing protocol
  - Manual summarization with any routing protocol
  - Redistribution between any pair of routing protocols
  - Routing protocol authentication
  - Bidirectional Forwarding Detection
- EIGRP
  - Adjacencies
  - Best path selection
  - Operations
  - EIGRP load balancing
  - EIGRP Named Mode
  - Optimization, convergence and scalability
- OSPF (v2 and v3)
  - Adjacencies
  - Network types, area types
  - Path preference
  - Operations
  - Optimization, convergence and scalability
- BGP
  - IBGP and EBGP peer relationships
  - Path selection
  - Routing policies
  - AS path manipulations
  - Convergence and scalability
  - Other BGP features
- Multicast
  - Layer 2 multicast
  - Reverse path forwarding check
  - PIM

Software Defined Infrastructure

- Cisco SD Access
  - Design a Cisco SD Access solution
  - Cisco SD Access deployment
  - Segmentation
  - Assurance

- Cisco SD-WAN
  - Design a Cisco SD-WAN solution
  - WAN edge deployment
  - Configuration templates
  - Localized policies (only QoS)
  - Centralized policies

Transport Technologies and Solutions

- MPLS
  - Operations
  - L3VPN
- DMVPN
  - Troubleshoot DMVPN Phase 3 with dual-hub
  - Identify use cases for FlexVPN

Infrastructure Security and Services

- Device Security on Cisco IOS XE
- Network Security
  - Switch security features
  - Router security features
  - IPv6 infrastructure security features
  - IEEE 802.1X Port-Based Authentication
- System Management
  - Device management
  - SNMP
  - Logging
- Quality of Service
  - End to end L3 QoS using MQC
- Network Services
  - First Hop Redundancy Protocols
  - Network Time Protocol
  - DHCP on Cisco IOS
  - IPv4 Network Address Translation
- Network optimization
  - IP SLA
  - Tracking object
  - Flexible NetFlow
- Network operations
  - Traffic capture
  - Cisco IOS-XE troubleshooting tools

Infrastructure Automation and Programmability

- Data encoding formats
  - JSON
  - XML
- Automation and scripting
  - EEM applets
  - Guest shell
- Programmability
  - Interaction with vManage API
  - Interaction with Cisco DNA Center API
  - Interaction with Cisco IOS XE API
  - Deploy and verify model-driven telemetry

Qualifying Exam (ENCOR 350-401)

- Architecture
    - Describe the different design principles used in an enterprise network
        - Understanding Enterprise network design such as Tier 2, Tier 3, and Fabric Capacity planning
        - Understanding High availability techniques such as redundancy, FHRP, and SSO
    - Identify design principles of a WLAN deployment
        - Understanding Wireless deployment models (centralized, distributed, controller-less, controller based, cloud, remote branch)
        - Understanding Location services in a WLAN design
    - Distinguish between on-premises and cloud infrastructure deployments
    - Describe the working principles of the Cisco SD-WAN solution
        - Understanding SD-WAN control and data planes elements
        - WAN and SD-WAN solutions
    - Describe the working principles of the Cisco SD-Access solution
        - Understanding SD-Access control and data planes elements
        - Traditional campus interoperating with SD-Access
    - Explain concepts of wired and wireless QoS
        - QoS components
        - QoS policy
    - Distinguish hardware and software switching mechanisms
        - Process and CEF
        - MAC address table and TCAM
        - FIB vs. RIB

- Virtualization
    - Explain device virtualization technologies
        - Hypervisor type 1 and 2
        - Virtual machine
        - Virtual switching
    - Configure and verify data path virtualization technologies
        - VRF
        - GRE and IPsec tunnelling
    - Explain network virtualization concepts
        - LISP
        - VXLAN

- Infrastructure
    - Layer 2
        - Troubleshoot static and dynamic 802.1q trunking protocols
        - Troubleshoot static and dynamic Ether Channels
        - Understanding how to configure and verify common Spanning Tree Protocols (RSTP and MST)
    - Layer 3
        - Compare routing concepts of EIGRP and OSPF (advanced distance vector vs. linked state, load balancing, path selection, path operations, metrics)
        - Understanding how to Configure and verify simple OSPF environments, including multiple normal areas, summarization, and filtering
        - Configure and verify eBGP between directly connected neighbors (best path selection algorithm and neighbor relationships)

- Wireless
  - Explain Layer 1 concepts, such as RF power, RSSI, SNR, interference noise, band and channels, and wireless client devices capabilities
  - Explain AP modes and antenna types
  - 3.3.c Explain access point discovery and join process (discovery algorithms, WLC selection process)
  - Explain the main principles and use cases for Layer 2 and Layer 3 roaming
  - Understanding how to troubleshoot WLAN configuration and wireless client connectivity issues
- IP Services
  - Explain Network Time Protocol (NTP)
  - Configure and verify NAT/PAT
  - Understanding how to Configure first hop redundancy protocols, such as HSRP and VRRP
  - Explain multicast protocols, such as PIM and IGMP v2/v3

- Network Assurance
  - Diagnose network problems using tools such as debugs, conditional debugs, trace route,ping, SNMP, and syslog
  - Configure and verify device monitoring using syslog for remote logging
  - Configure and verify NetFlow and Flexible NetFlow
  - Configure and verify SPAN/RSPAN/ERSPAN
  - Configure and verify IPSLA
  - Explain Cisco DNA Center workflows to apply network configuration, monitoring, and management
  - Configure and verify NETCONF and RESTCONF

- Security
  - Configure and verify device access control
    - Lines and password protection
    - Authentication and authorization using AAA
  - Configure and verify infrastructure security features
    - ACLs
    - CoPP
  - Describe REST API security
  - Configure and verify wireless security features
    - EAP
    - WebAuth
    - PSK
  - Describe the components of network security design
    - Threat defense
    - Endpoint security
    - Next-generation firewall
    - TrustSec, MACsec
    - Network access control with 802.1X, MAB, and WebAuth

- Automation
  - Interpret basic Python components and scripts
  - Construct valid JSON encoded file
  - Describe the high-level principles and benefits of a data modeling language, such as YANG
  - Describe APIs for Cisco DNA Center and vManage
  - Interpret REST API response codes and results in payload using Cisco DNA Center and RESTCONF

- Construct EEM applet to automate configuration, troubleshooting, or data collection
- Compare agent vs. agentless orchestration tools, such as Chef, Puppet, Ansible, and SaltStack

Lab Course

- Network Infrastructure
  - Configure Switched campus
    a. Execute Switch administration
    b. Execute Layer 2 protocols
    c. Execute VLAN technologies
    d. Execute Ether Channel
    e. Execute Spanning Tree Protocol

  - Configure Routing Concepts
    - Execute Administrative distance
    - Execute VRF-lite
    - Execute Static routing
    - Execute PolicyBased Routing
    - Execute VRF-aware routing with any routing protocol
    - Execute Route filteringwith any routing protocol
    - Execute Manual summarization with any routing protocol
    - Execute Redistribution between any pair of routing protocols
    - Execute Routing protocol authentication
    - Execute Bidirectional Forwarding Detection
  - Configure EIGRP
    - Execute Adjacencies
    - Execute Best path selection
    - Execute Operations
    - Execute EIGRP loadbalancing
    - Execute EIGRP Named Mode
    - Execute Optimization, convergence and scalability
  - Configure OSPF (v2 and v3)
    - Execute Optimization, convergence and scalability
      - Metrics
      - LSA throttling, SPF tuning, fast hello
      - LSA propagation control (area types)
      - Stub router
      - Loop-free alternate
      - Prefix suppression
  - Configure BGP
    - Execute IBGP and EBGP peer relationships
    - Execute Path selection
    - Execute Routing policies
    - Execute AS path manipulations
    - Execute Convergence and scalability
    - Execute Other BGP features
  - Configure Multicast
    - Execute Layer 2 multicast
    - Execute Reverse path forwarding check
    - Execute PIM

- Software Defined Infrastructure
  - Configure Cisco SD Access
    - Execute Design a Cisco SD Access solution
    - Execute Cisco SD Access deployment
    - Execute Segmentation
    - Execute Assurance
  - Configure Cisco SD-WAN
    - Execute Design a Cisco SD-WAN solution
    - Execute WAN edge deployment
    - Execute Configuration templates
    - Execute Localized policies (only QoS)
    - Execute Centralized policies

- Transport Technologies and Solutions
  - Configure MPLS
    - Execute Operations
    - Execute L3VPN
  - Configure DMVPN
    - Execute Troubleshoot DMVPN Phase3 with dual-hub
    - Execute Identify usecases for FlexVPN

- Infrastructure Security and Services
  - Configure Device Security on Cisco IOS XE
    - Execute Control plane policing and protection
    - Execute AAA4.2Network Security
  - Switch security features
  - Execute Router security features
  - Execute IPv6 infrastructure securityfeatures
  - IEEE 802.1X Port-Based Authentication
  - Configure System Management
    - Execute Device management
    - Execute SNMP
    - Execute Logging
  - Configure Quality of Service
  - Configure Network Services
    - Execute FirstHop Redundancy Protocols
    - Execute Network Time Protocol
    - Execute DHCP on Cisco IOS
    - Execute IPv4 Network Address Translation
  - Configure Network optimization
    - IP SLA
    - Execute Tracking object
    - Execute Flexible NetFlow
  - Configure Network operations
    - Execute Traffic capture
    - Cisco IOS-XE troubleshootingtools

- Infrastructure Automation and Programmability
  - Configure Data encoding formats
    - Execute JSON
    - Execute XML

- Configure Automation and scripting
  - Execute EEM applets
  - Execute Guest shell
  - Configure Programmability

Note: ***Most of the course topics are covered with hands-on lab exercises and others are theoretical

THANK YOU

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